

British 2267 of 1892
Weihe

2 sheets
sheet 1

416
166
115-45
170-163
Rank + Pinion

CLASS IS WITH
S. P. 10
4. Feather

170-160-43

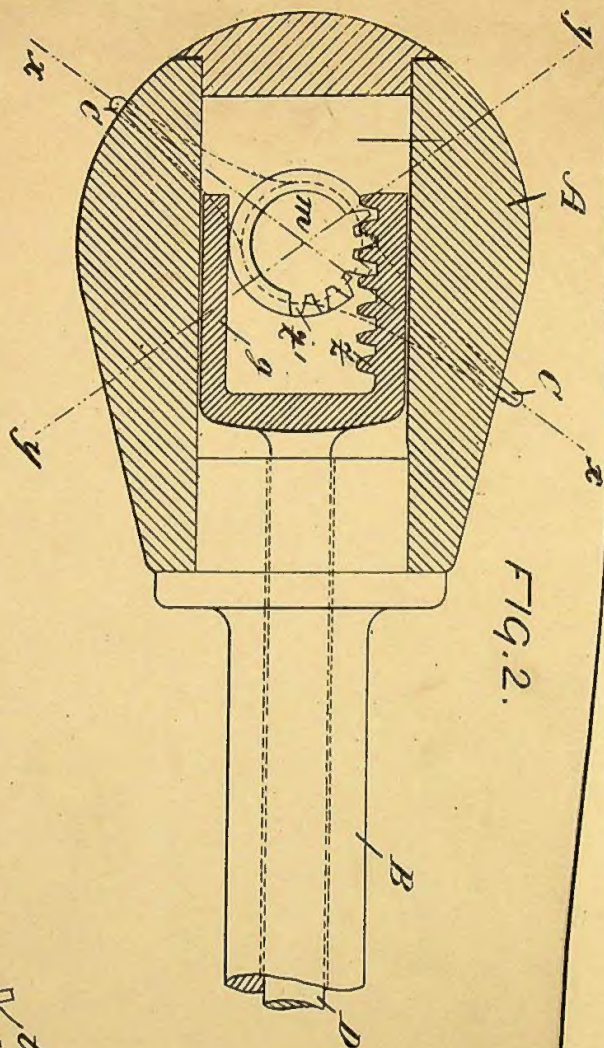


FIG. 2.

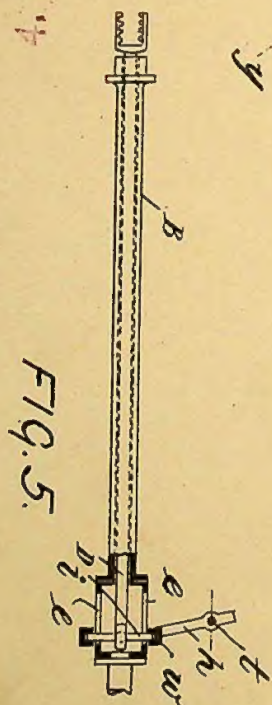


FIG. 5.

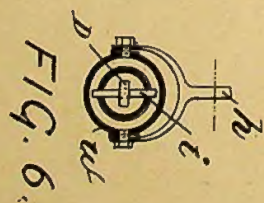


FIG. 6.

See Swedish 4904 Weihe (115-45)

2 sheets
sheet 1-b

British 2267 of 1892
Weihe

hipocrite rings

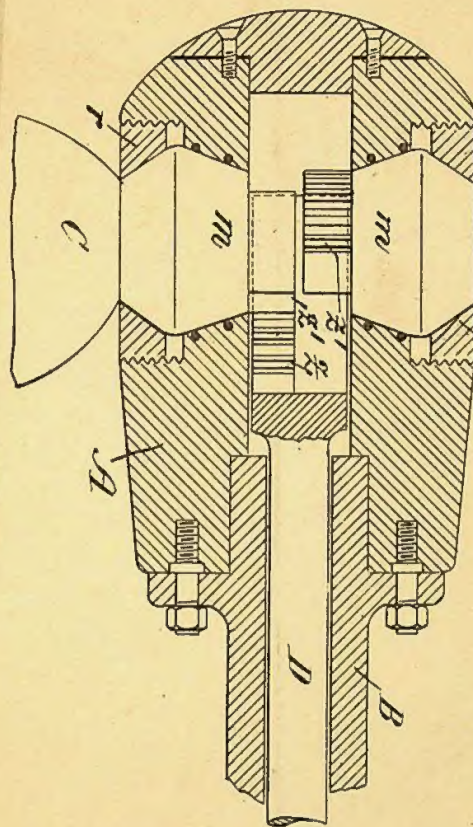


FIG. 1.

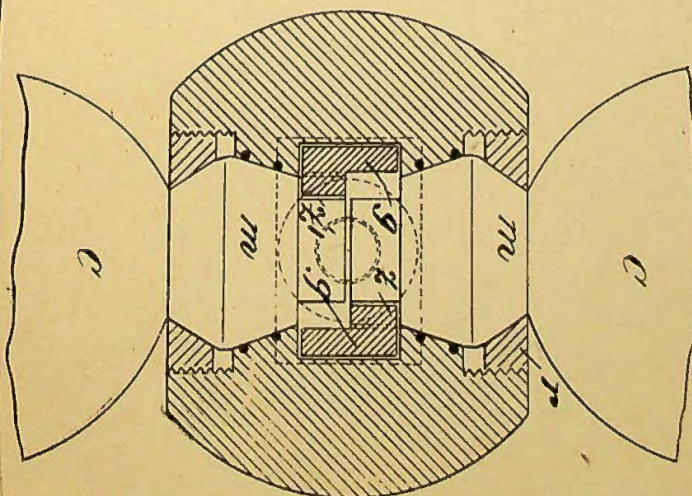


FIG. 3.

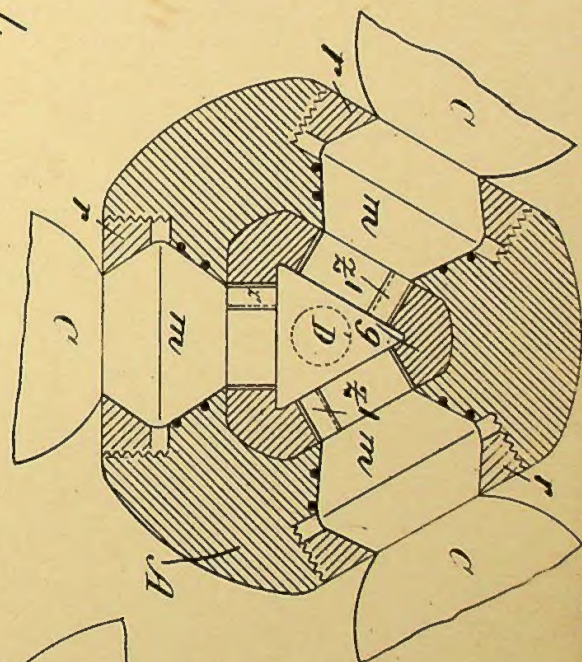


FIG. 4.

Screw Propellers Feathering

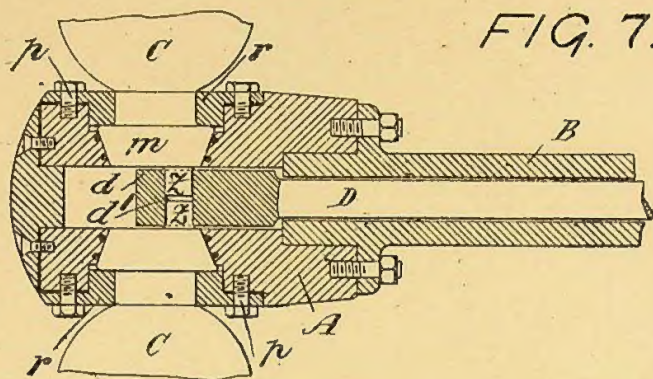


FIG. 7.

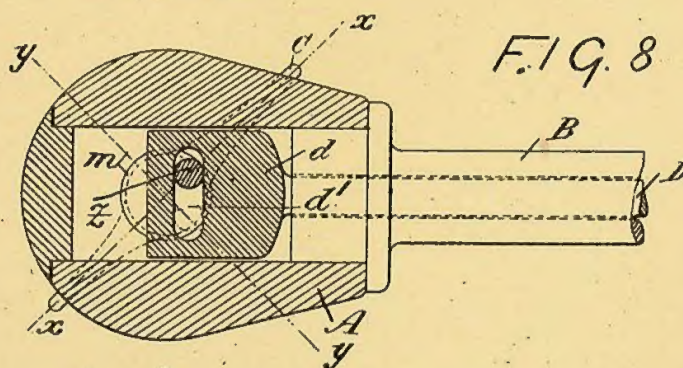


FIG. 8.

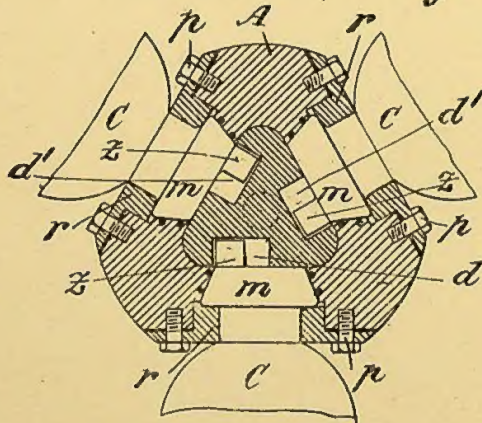


FIG. 9.

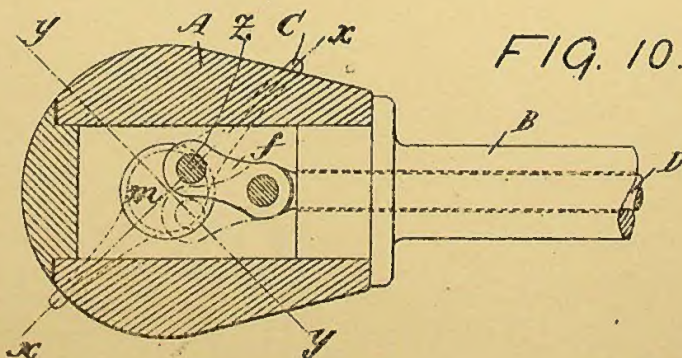


FIG. 10.

[This Drawing is a reproduction of the Original on a reduced scale]



Date of Application, 5th Feb., 1892—Accepted, 2nd Apr., 1892

COMPLETE SPECIFICATION.

Improvements in Reversible Screw Propellers.

I, MAX WEIHE retired Captain Lieutenant of the German Navy residing at No. 10 Alsterdamm Hamburg in the Empire of Germany do hereby declare the nature of this invention and in what manner the same is to be performed to be particularly described and ascertained in and by the following statement:—

- 5 This invention relates to screw propellers for ships or smaller vessels in which the blades are movable so that the direction in which the vessel is moving may be reversed without reversing the engines, and the object of the improvements is to render the connection between the blades and the central boss of the propeller stronger and to provide for the convenient removal or insertion of any of the
10 blades.

The accompanying drawing illustrates the improved propeller—

Fig. 1 being a vertical longitudinal section of a two bladed propeller—Fig. 2 a horizontal section thereof—Fig. 3 a vertical cross section thereof.

Fig. 4 is a vertical cross section of a three bladed propeller.

- 15 Figs. 5 and 6 are detail views of the mechanism for moving the blades for reversing the propeller.

Fig. 7 is a longitudinal vertical section of a modified construction of propeller.

Fig. 8 is a horizontal section and Fig. 9 is a vertical cross section thereof.

Fig. 10 is a horizontal section of a further modified construction of propeller.

- 20 A is the hollow boss of the propeller B is the propeller shaft. C the revolvable blades. D is a rod moveable endwise within the shaft B and having in its forked end *g* the teeth *z* which gear with the teeth *z*¹, on the inner ends of the shanks of the propeller blades respectively.

- The shanks *m* of the propeller blades are not made cylindrical but in the form of
25 two cones placed base to base partly to obtain a water tight joint and partly to enable them to be secured in the boss A by the screw threaded rings *r r* which are made each in two halves. The racks *z* are arranged one on each arm of the fork *g* and in different planes, the rack on the one arm gearing with the teeth *z*¹ on the shank of the one blade and the rack on the other arm gearing with the teeth *z*¹ on
30 the shank of the other blade, and the teeth are so engaged that when the fork *g* is drawn back as in Fig. 2 the one blade occupies the position *x x* while the other occupies the position *y. y*. On thrusting forward the fork *g* (*i.e.* outward aft of the ship) the blades are revolved in opposite directions and that previous at *x, x* passes into the plane *y. y* while that previous at *y y* passes into the plane *x x*.

- 35 For propellers with more than two blades the construction of the fork *g* is altered correspondingly as in Fig. 4.

- In the construction shown in Figs. 5 and 6 the rod D is provided at its inner end with a cross pin *i* passing through slots *e e* in a box forming part of the shaft B and engaging in an annular recess in a ring *w* which may be moved by a lever *h* pivoted
40 at *t* so as to adjust the rod D without interfering with its rotation.

By turning the blades C more or less within their extreme positions the vessel may be caused to travel faster or slower if the velocity of the engines is controlled by suitable governors.

- In the modification shown in Figs. 7 to 9 the teeth *z*¹ are replaced by a single
45 gudgeon *z* on the trunnion *m* of each blade C, and in place of the fork *g* with its teeth, a block or enlargement *d* on the rod D is employed and provided with a cross slot *d*¹ to receive each gudgeon *z*. The gudgeons being excentrically placed on the trunnions *m*, the endwise movement of the rod D causes the blades to revolve on lines radial to the boss A through about 90°. For a three bladed propeller the block *d*
50 is made with three slots *d*¹.

[Price 8d.]

Weihe's Improvements in Reversible Screw Propellers.

Fig. 7 shows also a modification in the method of fastening the blades to the boss; in place of a double conical trunnion *m* the latter is made conical at the end but above the conical end it is recessed cylindrically to receive the collar *r*. The collar *r* is also here shown as secured by screw bolts *p* instead of by being threaded to screw into the boss *A*. The collar *r* is in two parts as aforesaid. 5

A further modification is shown in Fig. 10, the gudgeon *z* in place of being engaged in a slot in a block *d*, is connected to the rod *D* by a short connecting link *f*, there being a link for each blade.

I do not claim broadly a propeller with moveable, adjustable, or feathering blades, but, 10

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is;—

1.) A screw propeller having adjustable or feathering blades *C*, with teeth *z*¹ on the trunnions thereof in combination with the endwise moveable rod *D* with fork or equivalent *g* and teeth *z*¹ thereon substantially as and for the purpose, set forth. 15

2.) A screw propeller in which the trunnions of the blades are revolvably secured in the boss by collars *r r* in two parts, the said trunnions being of double conical form, or made with conical ends and cylindrically recessed above said ends substantially as described and illustrated. 20

3.) A screw propeller in which the trunnions of the blades are provided each with an excentrically placed gudgeon *z* in combination with a rod *D* with block *d* having slots *d*¹ for engagement of said gudgeons respectively, substantially as and for the purpose set forth. 25

4.) A screw propeller in which the trunnions of the blades are provided each with an excentrically placed gudgeon *z* in combination with a rod *D* and a connecting link *f* for each gudgeon substantially as and for the purpose set forth.

Dated this 5th day of February 1892.

HERBERT & Co.,
18, Buckingham Street, Strand, London, W.C., Agents to Applicant. 30